CIRCULAR OF INFORMATION

OF

The Maryland Agricultural College

FOR THE YEAR COMMENCING

SEPTEMBER 18, 1895.

THIRTY-SEVENTH YEAR.

WASHINGTON, D. C.:
JUDD & DETWEILER, PRINTERS.
1895.

CALENDAR, 1895-1896.

1895.

Wednesday, Sept. 18, 10 a. m.—Opening session. Examination of candidates.
Thursday, Sept. 19, 10 a. m.—Examination of candidates.
Friday, Sept. 20, 10 a. m.—Examination of candidates.
Saturday, Sept. 21, 10 a. m.—Examination of candidates.
Monday, Sept. 23, 8 a. m.—Resumption of College exercises.
Friday, Dec. 20, 4 p. m.—Close of College exercises for Christmas.

1896.

Wednesday, Jan'y 3, 8 a. m.—Resumption of College exercises.
Saturday, Feb'y 22, ... —Commemorative exercises.
Thursday, April 2, noon. —Easter vacation begins.
Tuesday, April 7, 8 a. m.—Resumption of College exercises.
Saturday, May 30, ... —Vacation. Decoration day.
Saturday, June 13, ... —Address before Young Men's Christian Association.
Sunday, June 14, ... —Baccalaureate sermon.
Monday, June 15, 10 a. m.—Field sports.
3 p. m.—Public meeting of athletic associations.
8 p. m.—Public meeting of M. A. C. House of Commons.
Tuesday, June 16, 10 a. m.—Public meeting of literary societies.
2.30 p. m.—Military exercises, consisting of individual and company drills and competition for prizes.
8 p. m.—Class day exercises.
Wednesday, June 17, 2.30 p. m.—Commencement exercises. Conferring of degrees and address to the graduates.
4.30 p. m.—Exhibition drill on campus.
5 p. m.—Annual meeting of Alumni Association.
9 p. m.—Farewell ball to class of 1896.

BOARD OF TRUSTEES.

Members ex Officio under State Law.

His Excellency FRANK BROWN, Governor..President of the Board.
Hon. JOHN P. POE.....Attorney General.
Hon. MARION DE K. SMITH.....Comptroller of the Treasury.
Hon. SPENCER C. JONES.....State Treasurer.
Hon. JOHN WALTER SMITH.....President of the Senate.
Hon. J. HARRY PRESTON.....Speaker House of Delegates.

Members Elected by Stockholders.

Hon. MURRAY VANDIVER.....Havre de Grace, Harford County, Md.
Hon. WILMOT JOHNSON.....Catonsville, Baltimore County, Md.
CHARLES B. CALVERT, Esq.....College Station, Prince George's Co., Md.
ALLEN DODGE, Esq.....Washington, D. C.
CHARLES H. STANLEY, Esq....Laurel, Prince George's County, Md.

Members by Executive Appointment.

	Term expires.
C. J. PURNELL, Esq., Snow Hill, Worcester Co., Md.....	1900
Hon. DAVID SEIBERT, Clear Spring, Washington Co., Md....	1900
JEREMIAH P. SILVER, Esq., Glenville, Harford Co., Md.....	1896
L. LAKE, Glen Arm, Baltimore Co., Md.....	1896
Hon. ROBERT MOSS, Annapolis, Md.....	1898
Hon. CHARLES H. EVANS, Baltimore, Md.....	1898

FACULTY AND ORGANIZATION.

R. W. SILVESTER, President and Professor of Mathematics.

R. H. ALVEY, Vice-President and Professor of English and Civics.

CLOUGH OVERTON, 2d Lieutenant, Fourth Cavalry, U. S. A., Commandant of Corps of Cadets.

H. B. MCDONNELL, M. D., B. S., Professor of Chemistry.

W. T. L. TALIAFERRO, Professor of Agriculture.

MARTIN P. SCOTT, M. D., Professor of Natural History.

JAMES S. ROBINSON, Professor of Horticulture and Botany.

THOMAS H. SPENCES, Professor of Language.

J. D. FORD, U. S. N., Mechanical Engineering.

Dr. ROBERT WARD, F. R. C. V. S.

H. T. HARRISON, Principal Preparatory Department.

H. M. STRICKLER, Professor of Physical Culture.

* H. C. SHERMAN, B. S.,
F. P. VEITCH, B. S.,
F. B. BOMBERGER, B. S., } Assistants in Chemistry.
W. W. SKINNER, B. S.,
C. C. MCDONNELL, B. S.,

HARRY GWIMER, Assistant in Mechanical Engineering.

R. R. PUE, Librarian.

JOSEPH R. OWENS, Treasurer.

C. A. WOODHEAD, Stenographer and Typewriter.

---

* Leave of absence granted for one year to pursue special course at Columbia College, New York.

CIRCULAR OF INFORMATION

OF THE

MECHANICAL DEPARTMENT.

JOHN D. FORD, U. S. N., Principal.
HARRY GWIMER, Assistant Principal.

The completion of the Mechanical Building and its partial equipment puts the College in condition to offer to the public the commencement of a thoroughly organized Department of Mechanical Engineering. The following outline will give some idea of the scope of the work and what it proposes for the future.

The Course in Mechanical Engineering.

The object of this course is to give the young men of our section an opportunity to study the science of machines near their homes. The principal subjects studied are the nature, equivalence, and analysis of mechanisms, the mechanics or theory of the principal classes or types of machinery, mechanical technology, and the principles and practice of machine design.

That the students may obtain the practical engineering data which they will most need when beginning their work as mechanical engineers, they are required to pursue a course of shop instruction, which necessarily involves manual labor and manipulation of tools, which is principally devoted to familiarizing them with those points in pattern-making, molding, forging, fitting, and finishing which they need to know as designers of machinery. Particular attention is therefore directed to the forms and sizes of machine parts that can be readily constructed in the various workshops; to the time that it takes to perform and the order of the various operations; to the dimensions most needed by workmen, and to the various devices for increasing the accuracy of the work, durability of the parts, and convenience of manipulation. This involves acquaintance with the process and machinery of the workshops, but it is the superintendent's knowledge which is required rather than the manual dexterity and skill of the workman and tool hand.

Schedule of the Course in Mechanical Engineering.

Freshman Year.

First Term.	*Second Term.*
Solid Geometry.	Plane and Spherical Trigonometry.
Algebra.	General Chemistry.
General Chemistry.	Chemical Laboratory.
Chemical Laboratory.	History.
Rhetoric and English Composition.	French (or German).
French (or German).	Mechanical Drawing and Descriptive Geometry.
Mechanical Drawing.	Freehand Drawing.
Freehand Drawing.	Wood-turning.
Carpentry.	Military Drill.
Military Drill.	

Sophomore Year.

First Term.	*Second Term.*
Principles of Mechanism.	Mechanism: Machinery, Machine Tools, Gear Teeth.
Drawing.	Drawing.
Pattern-making.	Pattern-work and Molding.
Analytical Geometry.	Differential Calculus.
Descriptive Geometry.	Physics.
Physics.	English Literature and Composition.
English Literature.	German.
American History.	Military Drill.
German.	
Military Drill.	

Junior Year.

First Term.	*Second Term.*
Steam Engineering, Valve Gears.	Steam Engineering, Boilers.
Thermo dynamics.	Drawing, Design and Use of Surveying Instruments.
Drawing.	Engineering Laboratory.
Forging.	Chipping and Filing.
Integral Calculus.	Strength of Materials, Kinematics, and Dynamics.
General Statics.	Physical Laboratory.
Physics, Heat.	English Composition.
Physical Laboratory.	Specifications of Machines.
German.	German.
Military Drill.	Military Drill.

SENIOR YEAR.

First Term.	*Second Term.*
Steam Engineering.	Hydraulic Motors.
Hydraulics.	Engineering Laboratory.
Dynamics of Machines.	Machine-shop Work.
Machine Design.	Strength and Stability of Structures, Theory of Elasticity.
Engineering Laboratory.	English Composition.
Machine shop Work.	Drawing up Contracts.
Strength of Materials, Friction.	Iron and Steel Shipbuilding, Marine Engineering.
Metallurgy of Iron.	Thesis.
Heating and Ventilation.	
Elements of Dynamo Machinery.	
Locomotive Construction.	

In undertaking the course in Mechanical Engineering it should be borne in mind that of the subjects studied in the first and second years those most vital to success are Mathematics, Physics, and Drawing (including Descriptive Geometry). All the later professional work of the department is so completely dependent upon these branches that no student can expect to succeed in it without having mastered them.

The professional work of the course in Mechanical Engineering may be classified as follows:

(*a.*) Mathematics, Physics, and Applied Mechanics, given outside the department, the last including the study of and practice in testing the strength of materials.
(*b.*) Class-room work of the department proper.
(*c.*) Drawing.
(*d.*) Engineering Laboratory-work.
(*e.*) Shop-work.
(*f.*) Visits to engineering works and manufacturing establishments.

The work of the first year is mainly introductory.

In the second year the more essential subjects given outside the department are Analytical Geometry, Differential Calculus, and Physics. The department gives a course in the principles of mechanism and in the construction of gear teeth, followed by courses on the mechanism of machine tools and of machinery. In intimate connection with this, practice is given in making working drawings of parts of machinery from measurements and other drawings illustrating the class-room work. Instruction is also given in patern-making and molding at the shops.

The more important third-year subjects are:

(*a.*) Integral Calculus.

(*b.*) Physics, including a special study of heat and work in the physical laboratory.

(*c.*) Applied Mechanics, devoted mainly to a mathematical study of the strength of materials.

(*d.*) Valve gears.

(*e.*) Thermo-dynamics and Steam Engineering.—This course includes a detailed study of the principles of Thermo-dynamics; a discussion of the properties of gases and vapors, especially steam; of the flow of steam and other fluids of the steam-injector and the hot-air engine. This is followed by a study of the steam-engine, of the compound and multiple-expansion engine, and of the method of testing steam-engines and the study of steam-boilers.

(*f.*) Drawing.—The course for the first term includes detail drawings from measurement of some machine, and assembly drawings made from these detail drawings. In the second term it is devoted to boiler-drawing and the working out of valve gears and mechanism designs.

(*g.*) Engineering Laboratory-work.—This is given during the second term, and is devoted to exercises in steam engine and boiler tests, for which the engine and boilers of the department are used.

(*h.*) Shop-work.—The shop-work of the third year includes forge-work and chipping and filing.

The fourth-year subjects are:

(*a.*) Applied Mechanics.—The work in this subject aims to familiarize the students with such data on the strength of materials used in construction as have been obtained by means of experiments, especially those made on a practical scale, in different parts of the world. This is followed by a study of friction and lubrication, of girders, stone and iron arches, and of the theory of elasticity.

(*b.*) Steam Engineering.—A careful study is made of such data as have been based on reliable tests made on large, single, compound and multiple-expansion engines. The gas engine, air-compressors, and refrigerating machines are also studied.

(*c.*) Machine Design.—Each student is required to make a certain number of designs, as the design of a set of hangers, the design of a boiler, of a shaft with gears and pulleys, and he is required to make all the calculations and drawings necessary for every detail, determining the strength of every part by means of the principles already learned.

(*d.*) Hydraulics and Hydraulic Motors.—The main principles of hydraulics are taught, including the flow of water through orifices and pipes and over weirs.

(*e.*) Industrial Management.—This involves a study of the organization and relations of the various departments of an industrial establishment, both in the office and in the workshop, the conduct of accounts, the methods of compensating labor and of superintendence, and the effect upon cost of production, of interest, and other forms of expense.

(*f.*) Engineering Laboratory-work.—Testing the efficiency of the boilers, engines, pumps, and other apparatus of the department.

(*g.*) Heating and Ventilation.—(A short course.)

(*h.*) Metallurgy.—(A short course.)

(*k.*) Dynamo-electrical Machinery.—(A short course.)

(*l.*) Shop-work.—Machine-shop work.

(*m.*) Locomotive Construction and Management.—(A short course.)

(*n.*) Iron and Steel Shipbuilding.—(A short course.)

(*o.*) The Thesis.—The thesis required of every candidate for graduation involves the investigation of an assigned problem.

Further information, if desired, can be had on application for the Annual Report, 1893.

EXPENSES.

We have three grades of students.

1. Regular Matriculates.
2. State Scholarship.
3. Day Students.

Charges for first class of students are:

1. $140 board for scholastic year.
2. $4 medical fee.
3. $6 for use of material in practical laboratory.
4. $5 annual deposit, security against damage to property.

Second class of students the same as above, with exception of board, which is $45 for scholastic year.

Third class of students pay no medical fee. Laboratory and annual deposit same as other students, and $24 tuition fee.

Methods of Payment.

For regular matriculates: Medical fee, deposit, laboratory, and $40 on board are paid on entrance; $40 November 15th; $40 February 1st; $20 April 1st.

For State students: Medical fee, laboratory, deposit, and $22.50 payable on entrance; $22.50 February 1st.

For day students: Deposit, laboratory fee, and $12 payable on entrance; $12 February 1st.

These charges cover all expenses for board, tuition, fuel, light, books, use of library, and gymnasium.

Room furnished with bedstead, chairs, table, mattress, washstand. The students furnish their rooms with the remaining necessary articles, which can be obtained at the institution at very reasonable rates.

Articles Needed.

Wash basin and pitcher.
6 towels.
3 pairs of sheets for single bed.
1 pair of blankets.
1 comfort.

2 bedspreads, which must be of uniform color, can be obtained from quartermaster's department.

1 drop-light for study, furnished with a Welsbach burner.

2 uniforms, costing $16.45, furnished by Baltimore house under contract.

Regulations to which Special Attention is Called.

1. Payments must be made as indicated.

2. The regulations are such as are believed to be conducive to the best interest of the College and young men committed to its care. Exceptions cannot be made for individual cases. PARENTS AND GUARDIANS WILL PLEASE NOTE THIS.

3. The $5 deposit is merely intended to cover destroyed property. Any student abusing College property and who is personally known will have the damage charged against his individual account. Property destroyed, where responsibility cannot be fixed to an individual, will be charged to this fund and will be distributed *pro rata* among the student body. All balances remaining at the end of the year will be returned with the final report.

4. Uniforms must be worn at all times during the scholastic year. Exception is made when students are engaged in athletic exercise.

5. Books of regulation are furnished students on entrance, and they are expected to closely observe the requirements.

All communications for information or business with the College should be addressed to the

PRESIDENT MARYLAND AGRICULTURAL COLLEGE,
COLLEGE PARK,
Prince George's County, Md.

Express Office:
COLLEGE STATION, B. & O. R. R.,
Prince George's County, Md.